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# State of Utah

## DEPARTMENT OF NATURAL RESOURCES

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### Division of Oil, Gas and Mining

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Outgoing  
m/0450049

0001

February 1, 2010

Rick Havenstrite  
Desert Hawk Gold Corporation  
8921 North Indian Trail Road, Suite 288  
Spokane, Washington 99208

Subject: First Review of Notice of Intention to Commence Large Mining Operations, Desert Hawk Gold Corporation, Cactus Mill, M/045/0049, Tooele County, Utah

Dear Mr. Havenstrite:

The Division has completed a review of your Notice of Intention to Commence Large Mining Operations for the Cactus Mill, which was received September 28, 2009. The attached comments will need to be addressed before tentative approval may be granted.

The comments are listed under the applicable Minerals Rule heading; please format your response in a similar fashion. Please address only those items requested in the attached technical review by sending replacement pages of the original mining notice using redline and strikeout text, so we can see what changes have been made. After the notice is determined technically complete and we are prepared to issue final approval, we will ask that you send us two clean copies of the complete and corrected plan. Upon final approval of the permit, we will return one copy stamped "approved" for your records.

The Division will suspend further review of the Notice of Intention until your response to this letter is received. If you have any questions in this regard please contact me at 801-538-5261 or Leslie Heppler, at 801-538-5257. Thank you for your cooperation in completing this permitting action.

Sincerely,

Paul B. Baker  
Minerals Program Manager

PBB:lah:vs

Attachment: Review

cc: BLM - Larry\_Garahana@BLM.gov Stephen\_Allen@BLM.gov SITLA - Wstokes@utah.gov DEQ - wwcampbell@utah.gov  
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**First REVIEW OF NOTICE OF INTENTION  
TO COMMENCE LARGE MINING OPERATIONS**

**Desert Hawk Gold Corporation  
Cactus Mill**

**M/045/0049  
December 7, 2009**

**General Comments:**

Comm ent #	Sheet/Page/ Map/Table #	Comments	Initials	Review Action
1	General	Submittal should be formatted to easily incorporate additional revisions and amendments.	lah	
2	General	Based on the responses received, the Division will likely have additional comments not covered in the current review. Lack of surety data, i.e. outdated costs, lack of facilities noted, clay mine area specifics, leach pad, evaporation ponds, etc., will require additional comments	lah	
3	General	When addressing this review, please include a cover letter showing page and paragraph where each comment has been addressed.	lah	
4	General	The form used for this submittal is a guide developed by the Division to assist operators in preparing large mine notices. Much of the text in the form consists of instructions to the operator and is not needed for the plan. In many cases, it becomes difficult to distinguish between the mine plan and instructions in the form. Please remove those portions that are not part of the mining and reclamation plan.	pbb	
5	Page 1 Para 1	Clay mine area is noted in text, but acreage is not noted, as shown (figure 2 and 3). The clay area is a larger disturbance than the operation site of 9.5 acres. Add surface disturbance acreage for the clay mine.	lah	
6	Page 1 Para 2	Define in the text what "percent" grade leach pads will be built to. Sentence is confusing "...if needed..." evaporation pond? or iron sludge operation? Rewrite sentence, into 2 sentences to eliminate confusion.	lah	

**R647-4-104 - Operator's, Surface and Mineral Ownership**

Comm ent #	Sheet/Page/ Map/Table #	Comments	Initials	Review Action
7	Page 3 #5.	Check legal description of property location. As per map (figure 1), the location also includes Section 2 in T8S. Both the legal description and map location must match with location on the ground.	lah	

**R647-4-105 - Maps, Drawings & Photographs**

**General Map Comments**

Comm ent #	Sheet/Page/ Map/Table #	Comments	Initials	Review Action
8	General	Please include a comment in the text about features that are required for the maps but are not shown because they are not present, such as landing strips, springs, etc.	lah & pbb	
9	General	The clay mine area needs to have a complete set of maps and completed text	lah	



**105.1 - Topographic base map, boundaries, pre-act disturbance**

Comm ent #	Sheet/Page/ Map/Table #	Comments	Initials	Review Action
10	Page 4 (C)	Label on maps the public roads.	lah	
11	Page 4 (D)	Figure 4 does not indicate all areas that have been impacted by mining. Nothing is shown for the clay area on the map. If there is no historic disturbance at the clay site, then note in the text.	lah	

**105.2 - Surface facilities map**

Comm ent #	Sheet/Page/ Map/Table #	Comments	Initials	Review Action
12	Figure 4 & 5	Include a comment in the text about features that are required for the maps but are not shown because they are not present, such as utilities, waste facilities, etc.	lah	
13	Figure 4 & 5	Show topsoil areas (growth medium) from which growth medium will be salvaged. Also show the location of drainage control structures.	lah	
14	Omission	All buildings and laydown yard equipment and parts need to be accounted for in the surety calculations.	lah	

**105.3 - Drawings or Cross Sections (slopes, roads, pads, etc.)**

Comm ent #	Sheet/Page/ Map/Table #	Comments	Initials	Review Action
15	Omission	Submit cross sections of entire site that will be disturbed. Also include for Clay Mine cross sections. Provide cross sections showing both the pre and anticipated post - mining topography and a contour map showing the area following reclamation. Cross sections should not include vertical exaggeration, and the maximum slope angles should not be greater than those allowed by rule.	lah	
16	Omission	Include a geologic map, with legend.	lah	
17	Figure 5D	Discussion is needed in text how you will eliminate damage to the "continuous liner" by equipment.	lah	
18	Figure 5D	What type of plastic liner will be used? HDPE?	lah	

**105.4 - Photographs**

Comm ent #	Sheet/Page/ Map/Table #	Comments	Initials	Review Action
19	Omission	It is recommended that the Operator include photographs of the site before leach pads are installed. , Thank you for including other photographs in the plan; please note the location of the photographs in the text.	lah	



## **R647-4-106 - Operation Plan**

### **106.2 - Type of operations conducted, mining method, processing etc.**

Comm ent #	Sheet/Page/ Map/Table #	Comments	Initials	Review Action
20	Page 6 para 3	As written "...clay will be placed in to a thickness of <b>about</b> 12 inches..." Change verbiage to a <b>minimum</b> thickness.	lah	
21	Page 6 para 3	It is unclear how a 2'x 2' wide berm will be adequate or if it would be practical to build, as 45 slopes are difficult in most materials.	lah	
22	Page 6 Para 3	As noted in comment 17 above, what type of plastic liner is used?	lah	
23	Page 6 para 3	Monitoring wells benefit the operator. The Division recommends including an above gradient and perhaps 3 wells down gradient. Refer to the map with locations. As currently shown - 2 wells are don't appear to be down gradient from the lowest portion. Please include a water monitoring schedule on this page and on page 11.	lah	
24	Omission	Include crushing facilities that are needed; also include in surety.	lah	
25	Omission	Nothing is mentioned about the support facilities that are associated with mining, such as water, fuel, chemicals, equipment maintenance, and admin that is needed to support a mining operation. These need to be included in the surety.	lah	
26	Page 7 Para 4 and	It is unclear which part of the sentence "..., if necessary," refers to. Recountouring, ripping, and seeding are all needed. Please reword.	lah	

### **106.3 - Estimated acreages disturbed, reclaimed, annually**

Comm ent #	Sheet/Page/ Map/Table #	Comments	Initials	Review Action
27	Page 7	Refer to Figure number in text and note on the figure the acreage for each. The acres will tie into the surety sheet. The NOI should not include the words "should match." Does the acreage figure for "actual mining" include the site from which clay will be extracted?	lah	

### **106.4 - Nature of materials mined, waste and estimated tonnages**

Comm ent #	Sheet/Page/ Map/Table #	Comments	Initials	Review Action
28	Page 7	Please note in verbiage that your material will be mined off site.	lah	
29	Page 7	What is the "time estimate" that is needed for rinsing? Include the range of pH that will be achieved when rinsing is complete. Include in all parts of the permit where this paragraph is used.	lah	
30	Page 7	Prior to removing 'leached' material from the pad, you will need to contact both DEQ and DOGM and provide copies of monitoring data and receive approval to move the material to a disposal area. Where will the 'spent ore' be disposed of? This area will also need to be permitted.	lk	



### 106.5 - Existing soil types, location, amount

Comm ent #	Sheet/Page/ Map/Table #	Comments	Initials	Review Action
31	Page 8	While the Division will not argue that the area (soils) have been disturbed in the past, the fact is that there are suitable soil material (as evidenced by the current vegetation establishment) that is suitable for plant growth, and as such needs to be characterized and salvaged for reclamation. (Even a inch or two of topsoil can make a great difference in revegetation success). Also, the clay mining area is considered part of this operation, and as such you need to provide soil information and plans for that area as well. The following data is needed for each soil type (and the disturbed soils that could be used as a substitute plant growth medium): Texture, pH, EC(conductivity), SAR (sodium absorption), CEC (cation exchange capacity), Percent Organic Matter, Total Nitrogen, Nitrate Nitrogen, Phosphorus (as P <sub>2</sub> O <sub>5</sub> ), and Potassium (as K <sub>2</sub> O). The volume of each soil material that can be stockpiled for reclamation is also needed as well as the location of each soil stockpile needs to be shown on a map. Note, there is a statement on page 11 that states that all suitable soil material will be salvaged.	lk	

### 106.6 - Plan for protecting & re-depositing soils

Comm ent #	Sheet/Page/ Map/Table #	Comments	Initials	Review Action
32	Omission	Please provide plans for protecting the soil resources and describe how they will be re-deposited, including depth of replacement and the need for any amendments and/or fertilizer.	lk	

### 106.7 - Existing vegetation - species and amount

Comment #	Sheet/Page/ Map/Table #	Comments	Initials	Review Action
33	Page 9 omission	Based on photos provided, there appears to be a significant amount of vegetation on the mill site. Please provide the results of a vegetation survey as required. You will also need to provide the same for the clay mining area. Data needed includes a list of species present and the percent ground cover of vegetation. If different vegetation types exist, then this data needs to be provided for each vegetation type.	lk	

### 106.8 - Depth to groundwater, extent of overburden, geology

Comment #	Sheet/Page/ Map/Table #	Comments	Initials	Review Action
34	Page 9	Include a reference to the geologic map noted above (comment #16). This will make revisions simpler in the future.	lah	
35	Omission	Include the clay pit.	lah	



### 106.9 - Location & size of ore, waste, tailings, ponds

Comment #	Sheet/Page/ Map/Table #	Comments	Initials	Review Action
36	Page 10 Para 6	Include rinsing and pumping costs in the surety sheet.	lah	
37	Omission	It is unclear what long term maintenance costs will be needed for the heap leach (and clay pit area) if the mine is not economically feasible.	lah	

### R647-4-108 - Hole Plugging Requirements

Comment #	Sheet/Page/ Map/Table #	Comments	Initials	Review Action
38	Page 12	The plan says Desert Hawk has no plans to drill any holes on the site, but Figure 5 shows water monitoring wells. Please make the appropriate modifications to the text. Include in Surety calculations	pbb	

### R647-4-109 - Impact Assessment

#### 109.1 - Impacts to surface & groundwater systems

Comment #	Sheet/Page/ Map/Table #	Comments	Initials	Review Action
39		The permit merely mentions a 2 x 2 foot berm as protection for the facilities area. The Division needs the appropriate watershed area calculations to verify that all water conveyances are designed to have adequate capacity, to be stable over the range of flows under which they will be expected to function, and to have adequate energy dissipation. Regardless of the design used, <b>no hydrologic designs were included in the notice.</b> A certain level of probability exists that the design condition will be exceeded. Determining the acceptable risk of failure becomes a large part of the design. Since this plan, is dealing with hazardous sulfuric acid leach chemicals and by products of this leach process and leach facilities, the Division is asking that all diversions and ponds be designed to handle the 100 year, 24 hour event. This will require that watershed maps be generated, peak flows calculated, these flows routed through the bypass ditches and the surge pond be designed to handle runoff and process water.	TM	
40		The plan states that two monitoring wells will be put in at the site, but does not provide any details regarding their installation related to geology or hydrology. Please provide this design information.	TM	

#### 109.2 - Impacts to threatened & endangered wildlife/habitat

Comment #	Sheet/Page/ Map/Table #	Comments	Initials	Review Action
41	Page 12-13 Omission	The NOI discusses only potential impacts for the mill area. This needs to be extended to the clay mining area as well. Also, while not a threatened or endangered species, mule deer inhabit the area and is considered a big game species.	lk	



### 109.3 - Impacts on existing soils resources

Comm ent #	Sheet/Page/ Map/Table #	Comments	Initials	Review Action
42	Omission	DOGM realizes that most of the soils at the mill area have been previously disturbed. However, this past disturbance does not necessarily make them unsuitable for reclamation. The requested analysis will be key in determining the extent of impact and suitability of the material (reasonable amendments and/or fertilizers may be required to make the existing disturbed soils suitable).  There is no discussion regarding impacts on the soil resources associated with the clay mining area. This needs to be provided.	lk	

### 109.4 - Slope stability, erosion control, air quality, safety

Comm ent #	Sheet/Page/ Map/Table #	Comments	Initials	Review Action
43	Omission	Nothing is written about air quality. What dust suppression will be done for dust associated with hauling on roads and crushing?	lah	
44	Omission	Air quality permits may be required from the State Dept. of Environmental Quality.	lk	

### 109.5 - Actions to mitigate any impacts

Comm ent #	Sheet/Page/ Map/Table #	Comments	Initials	Review Action
45	Omission	Nothing is written in the text. Include a place holder in Appendix for other agencies' letters and approvals, including all that apply, such as DEQ, SHPO, or any county requirements.	lah	
46	Omission	Adding soil amendments may be appropriate mitigation to mitigate past and future impacts to the soil resources. Identify proposed amendments based on soil analysis	lk	

### R647-4-110 - Reclamation Plan

#### 110.2 - Roads, highwalls, slopes, drainages, pits, etc., reclaimed

Comm ent #	Sheet/Page/ Map/Table #	Comments	Initials	Review Action
47	Page 14	Any existing features or structures that are utilized in the mine process proposed in the NOI must be reclaimed, after they are no longer utilized. The Division would allow a transfer of responsibility for these structures, but reclamation must be included as part of the surety. Please make this clear in the text. Leaving the mill buildings is not in keeping with the 'wildlife habitat and grazing' land use.	lah lk	
48	Page 14 para 3	The plan says "Testing <b>will be</b> performed to ascertain whether the materials on the pads will support vegetation." Testing needs to be done on the material prior to stacking the leach pad and a process developed for the capping (and the revegetation) of the leach pad after mining has been completed.  Existing soil resources need to be salvaged prior to development of the pad. These materials should then be re-applied and amended as appropriate to support vegetation establishment.	lah lk	



Comm ent #	Sheet/Page/ Map/Table #	Comments	Initials	Review Action
49	Page 14 Para 6	After soil resources are replaced, the area should be ripped on the contour	lk	
50	Page 14 para 7	It is not clear how crushed rock will not retain water. Will it be capped with clay?	lah	
51	Page 15 Para 2	It is unclear which part of the sentence "..., if necessary," refers to. Recountouring, ripping, and seeding are all needed. Please reword.	lah	
52	Page 14 Para 8	Please plan to remove/reclaim all structures. If, at the end of mining (during reclamation), it can be demonstrated that certain structures are needed for an alternative, non-mining use, you may submit an amendment to change the land use and leave those structures at that time. Until that time, you will need to bond for the removal of all structures.	lk	
53	Page 15 Para 2	Please provide details for reclamation of the 'clay mining area' – to what depth will plant growth material be replaced? Will amendments/fertilizer be used? What species will be used for seeding? How will it be seeded? At what time of the year? Will clay be removed from this area at one time only so that reclamation can be performed shortly thereafter, or will there be a continual need for the clay during operations so that the area will need to be left 'open' until the end of this operation?	lk	
54	Page 15 para 8	Will there be any riprap amour to the berm? The hydraulic design of the area is of great concern to DOGM, as historic inspections in the area indicate channel migration in all the alluvial areas.	lah	

### 110.3 - Description of facilities to be left (post mining use)

Comm ent #	Sheet/Page/ Map/Table #	Comments	Initials	Review Action
55	Page 16	Address buildings to be left in surety sheet. Note on surety as separate line items, so bond can be held for each facility that will remain. Refer to map. If the 2 buildings are not on surety sheet they will need to have a post mining land use. The NOI says the post mining use is to be "wildlife habitat and grazing." See comments 47, 52 and 59.	lah lk	

### 110.5 - Revegetation planting program

Comm ent #	Sheet/Page/ Map/Table #	Comments	Initials	Review Action
56	Page 16	Provide the depth at which growth medium will be replaced. What amendments will be used, and at what rate?	lk	
57	Page 17	To help assure a permanent and diverse vegetation cover, please consider: - Reducing or eliminating crested wheatgrass, and add intermediate wheatgrass. - Remove harrowing after seeding. It is best to leave a 'rough' surface to promote water retention for vegetation establishment and deter ATV use.	lk	



**R647-4-112 - Variance** (List all variances requested and make a finding if approving.)

Comment #	Sheet/Page/Map/Table #	Comments	Initials	Review Action
58	Page 17-18	<p>Apparently the operator has desired 3 variances. None of which can be approved at this time since the request does not provide all that is required for the Division to approve. For a variance to be approved, the operator needs to provide: 1) the rule for which the variance is requested (this was done for all three), 2) the requested variance and the area to which it applies (this is also apparently done for all three), 3) Justification for the variance (this was not provided or is considered incomplete), and 4) Alternate methods or measures to be utilized that would be consistent with the Act (this was either provided, or the alternate methods lack a demonstration that they are consistent with the Act).</p> <p>On a specific basis, refer to previous comments regarding leaving the buildings – the Division will not consider a variance to leave these facilities until at the end of mining. At that time, you may submit a variance request to leave the buildings via an amendment to change the post mining land use, and demonstrating that the buildings are needed for the alternative land use. With regards to the soils and revegetation variances, these cannot be analyzed until the Division receives the results of the soils analysis and vegetation survey.</p>	lk	

**R647-4-113 – Surety**

Comment #	Sheet/Page/Map/Table #	Comments	Initials	Review Action
59	Appendix	There are many comments listed above on different surety items that are not included in the surety sheet. Due to the complexities of this operation the Division suggests that the new DOGM surety sheet be utilized, as you will have to migrate to the form in the future.	lah	